



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/617,007	07/10/2003	Yonglin Huang	15436.251.2.1	3075

22913 7590 03/07/2005

WORKMAN NYDEGGER
(F/K/A WORKMAN NYDEGGER & SEELEY)
60 EAST SOUTH TEMPLE
1000 EAGLE GATE TOWER
SALT LAKE CITY, UT 84111

EXAMINER

PAK, SUNG H

ART UNIT PAPER NUMBER

2874

DATE MAILED: 03/07/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

H.A

Office Action Summary	Application No.	Applicant(s)	
	10/617,007	HUANG ET AL.	
	Examiner	Art Unit	
	Sung H. Pak	2874	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☒ Claim(s) 21 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>1103</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Information Disclosure Statement

Information disclosure statement filed 11/04/2003 have been considered by the examiner.

Claim Objections

Claim 21 is objected to because of the following informalities: the claim recites “A combiner... further comprising a latching magnetic material that protects the combiner from stray magnetic fields.” However, this limitation is inconsistent with what is disclosed in the specification. Specifically, on page 10 paragraph 0037, it is stated “... when the bi-directional communications transceiver is intended to be used in an environment with stray magnetic fields, a non latching material design may be preferable as the external magnets will be better able to control the polarization changes of light traveling within the combiner core.” Therefore, the claim should be amended to recite “non latching magnetic material.” Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 3, 6, 9, 10, 23-27 are rejected under 35 U.S.C. 102(e) as being anticipated by Kinoshita (US 2002/0008901 A1).

Kinoshita discloses an optical device with all the limitations set forth in the claims, including: a pump module for optical amplification of a light signal on a fiber-optic cable in a fiber-optic network, the pump module comprising an active component part comprising at least a first laser diode ('142A', Fig. 42) and a second laser diode ('142B', Fig. 42) disposed on a substrate ('142' Fig. 42); wherein the first laser diode output a first pumping beam and the second laser diode outputs a second pumping beam (Fig. 42); combiner components optically coupled to the active component part ('142C + 143 + 144-2') comprising a first and second wedge (Fig. 54a, 'Birefringent prism A & B'); a faraday rotator optically coupled to first and second wedge (paragraph 282); wherein the combiner isolates the first and second laser diode from back reflections ('144-2' Fig. 42); wherein the active part comprises discrete laser diodes bonded to the substrate (Fig. 42, '142A', '142B'); wherein the first and second laser diodes output linearly polarized beams that are perpendicular to each other (paragraph 0468-0469); wherein the laser diodes may be coupled the combiner through polarization maintaining fibers (Fig. 44, paragraph 0486-0496).

Claims 16-22 are rejected under 35 U.S.C. 102(b) as being anticipated by Fukushima (US 5,402,509).

Fukushima discloses an optical device with all the limitations set forth in the claims, including: a combiner for use in combining a first pumping beam with a second pumping beam traveling in a forward direction (Fig. 4, Fig. 6c); a first birefringent wedge that receives a first

Art Unit: 2874

pumping beam and a second pumping beam ('32' Fig. 4, Fig. 6c; column 5 lines 15-16, column 3 lines 31-34); wherein a state of polarization of the first pumping beam is substantially perpendicular to the state of polarization of the second pumping beam (column 6 lines 4-6); a rotator that rotates the first pumping beam and the second pumping beam (column 5 lines 36-38), wherein a return optical beam traveling in a backward direction through the combiner is rotated by the rotator such that a source of the first pumping beam and a source of the second beam are substantially isolated from the return optical beam (Fig. 7); a second birefringent wedge that combines the first pumping beam and the second pumping beam received from the rotator into an output beam (Fig. 6c); a first lens that focuses the first pumping beam and the second pumping beam into the first birefringent wedge ('7' Fig. 6c); a second lens that focuses the output beam ('3' Fig. 6c); a first polarization maintaining fiber that is connected with a source of the first pumping beam ('33' Fig. 6c); a second polarization maintaining fiber that is connected with a source of the second pumping beam ('34' Fig. 6c); wherein the polarization axis of the first polarization maintaining fiber is substantially perpendicular to the axis of the second polarization maintaining fiber (column 6 lines 4-6); a non-latching magnetic material used as a rotator, controlling the polarization so that stray magnetic fields do not influence the polarization of the transmitted light (column 3 lines 34-43); wherein the first and second pump beams may be generated by first and second laser diodes (column 11 lines 20-23).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2874

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 2, 4, 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita (US 2002/0008901 A1) in view of Bischel et al (US 2002/0110328 A1).

Kinoshita discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach the use of laser diodes monolithically formed on a substrate, having photodiodes configured to monitor the output power of the diodes.

Bischel, on the other hand, explicitly teaches a laser pump module having monolithically formed laser diodes with plurality of monitoring diodes (Fig. 10, paragraph 0124). This configuration is considered advantageous and desirable in the art because it allows for simplified connection arrangement between controller/modulator devices and the laser diodes, and allows for modularization of the pump light source, which simplifies the access to and/or replacement of the pump light source. Additionally, having a monitoring diode is considered advantageous and desirable in the art because it allows for accurate and precise generation of pumping light which prevents undesirable power fluctuation in the optical output. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Kinoshita device to have monolithically formed laser diodes with monitoring diodes configured to monitor the output power of the laser diodes.

Claims 7-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita (US 2002/0008901 A1).

Art Unit: 2874

Kinoshita discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach the active part coupled to the combiner through free space or through a fiber-optic pigtail. However, the use of free space or a fiber optic pigtail for coupling optical components is well known in the art. Free space coupling is considered advantageous and desirable in the art because it allows for modularization of active part relative to the combiner, which simplifies access to and/or replacement of active part. The use of a fiber-optic pigtail is considered advantageous and desirable in the art because it allows for accurate and precise placement of optical input/output ports for optimal coupling efficiency. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Kinoshita device to have active part coupled to the combiner through free space or through a fiber-optic pigtail.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kinoshita (US 2002/0008901 A1) in view of Souda et al (US 5,493,440).

Kinoshita discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach the use of wave plates for linearly polarizing first and second beams, so that the first and second beams assume substantially perpendicular polarization.

On the other hand, Souda explicitly teaches the use of wave plates for rotating the polarizations of the transmitted light such that light beams emitted from first and second input fibers assume substantially perpendicular polarization states (abstract). The use of wave plates is considered advantageous and desirable in the art because they provide low-cost and reliable

Art Unit: 2874

means for changing the polarization of transmitted optical beams. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Kinoshita device to have wave plates.

Claims 11-14 are rejected under 35 U.S.C. 103(a) as being obvious over Kinoshita (US 2002/0008901 A1) in view of Huang et al (US 6,628,461 B2).

The applied reference has at least one common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art only under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 103(a) might be overcome by: (1) a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not an invention "by another"; (2) a showing of a date of invention for the claimed subject matter of the application which corresponds to subject matter disclosed but not claimed in the reference, prior to the effective U.S. filing date of the reference under 37 CFR 1.131; or (3) an oath or declaration under 37 CFR 1.130 stating that the application and reference are currently owned by the same party and that the inventor named in the application is the prior inventor under 35 U.S.C. 104, together with a terminal disclaimer in accordance with 37 CFR 1.321(c). For applications filed on or after November 29, 1999, this rejection might also be overcome by showing that the subject matter of the reference and the claimed invention were, at the time the invention was made, owned by the same person or subject to an obligation of assignment to the same person. See MPEP § 706.02(l)(1) and § 706.02(l)(2).

Art Unit: 2874

Kinoshita discloses an optical device with all the limitations set forth in the claims as discussed above, except it does not explicitly teach the use of birefringent wedges that are thin film cubes, in which the wedges are one of Wollaston, Rochon, Glan-Thomson and Glan-Taylor prisms. Also, Kinoshita does not explicitly teach Faraday rotator being latching or non-latching magnetic material.

On the other hand, Huang explicitly teaches the use of Wollaston, Rochon, Glan-Thomson, or Glan-Taylor thin film birefringent wedges (column 3 lines 27-36). Huang also teaches the use of rotator that is latching or non-latching magnetic material (column 3 lines 41-46). This configuration is considered advantageous and desirable in the art, because it allows for accurate and precise control of polarization states of the transmitted optical signal, which produces efficient optical isolator device. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the Kinoshita device to have birefringent wedges that are thin film cubes, in which the wedges are one of Wollaston, Rochon, Glan-Thomson and Glan-Taylor prisms, and Faraday rotator that is latching or non-latching magnetic material.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sung H. Pak whose telephone number is (571) 272-2353. The examiner can normally be reached on Monday- Friday, 9AM-5PM.

The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 2874

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Sung H. Pak
Examiner
Art Unit 2874

sp